

Woodward-Clyde
Consultants

Engineering & sciences applied to the earth & its environment

January 28, 1993
87X4660 2.73Mr. Frank Battaglia
EPA Project Manager
USEPA-Region I
90 Canal Street
Boston, MA 02114Superfund Records Center
SITE: Ciba-Geigy
BREAK: 19.00
OTHER: 651213**Re: Postponement of 30-day Flush/Surge Test
CIBA-GEIGY Facility, Cranston, Rhode Island**

Dear Mr. Battaglia:

The 30-day flush/surge test proposed in the Stabilization Aquifer Test Plan is postponed. This letter summarizes the aquifer tests completed to date, discusses the basis for postponing the flush/surge test, and describes the impact to the project schedule.

Summary of Work Completed

As of January 21, 1993, the following aquifer tests have been completed: the step-drawdown tests, the 72-hour constant rate tests on recovery wells RC-1 and RC-2, the 30-day constant rate test, and the short-term single well pump tests conducted on several existing wells. From the step-drawdown tests, we obtained sufficient information to select the pumping rates for the constant rate tests and to evaluate the efficiency and specific capacity of recovery wells RC-1 and RC-2. From the 72-hour constant rate tests, data were obtained on aquifer transmissivity, storativity and drawdown with distance from the pumping well. During the 30-day constant rate test, data on changes in drawdown with time and changes in drawdown from pumping the two collector wells together were evaluated, as well as trends in the groundwater chemistry. The evaluation of the chemical data from the 30-day test is the basis for the decision on postponing the flush/surge test.

The short-term single well pump tests were completed on January 21, 1993. Performing these tests has given us additional data on the variability of hydraulic properties and groundwater chemistry of the Production Area, as well as design data for the groundwater capture system along the bulkhead and near SWMU-11. These tests were performed on the following wells: MW-1S, MW-2S, P-35S, MW-13S, MW-12S, MW-4S, and MW-14S.

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Basis for Postponing the Flush/Surge Test

The chemical results from groundwater sampled on the first, second, third, fourth, eighth, fifteenth, twenty-second, and twenty-ninth day of the 30-day constant rate test are summarized on the attached tables. Graphs of selected analytes - chlorobenzene, toluene, xylene, iron, and manganese - are presented also showing concentration changes over time for recovery wells RC-1 and RC-2.

Two trends are evident from the analytical data. First, fairly consistent levels of iron and manganese were detected in the groundwater samples collected during the 30-day test in both wells RC-1 and RC-2. Second, concentrations of organic compounds increased initially (generally for the first 2 to 7 days) and decreased gradually over the remainder of the 30-day constant rate test. The organic chemical concentration graphs suggest that decreases will continue until equilibrium is reached and consistently lower concentrations will be observed. The time for this trend to stabilize is not clear from the available data but may extend over several weeks.

The 30-day flush/surge test was designed to determine the impact that changes in pumping level and rate may have on contaminant concentrations and mass removal in groundwater. In order to generate data that will be useful for optimizing contaminant recovery from the flush/surge test, it is necessary to see the complete trend of contaminant concentrations in each well. Otherwise, it would not be known from the flush/surge test analytical data whether surging (raising water levels) has a net beneficial result on increasing contaminant concentrations hence, accelerating cleanup. Based upon the available data, it may take several months (6 to 9 months) to determine the effects and benefits (if any) of a flush/surge operation at this site.

- ✓ The 30-day flush test is postponed. This test will be performed (if needed) after the full-scale groundwater capture system becomes operational and longer-term trends can be evaluated. Although performing the flush/surge test will provide data that will optimize the time frame for cleanup, this information is not required to design the full-scale system. Data needed to complete the design of the full-scale system and meet the stabilization objectives have been collected. ✓

Impact to Project Schedule

The 30-day flush/surge test presented in the Stabilization Aquifer Testing Plan is postponed. Field activities for this investigation were completed on January 21, 1993. Data acquisition is expected to be completed by February 19, 1993 after analytical results from the single well pump tests are received. The Stabilization Investigation

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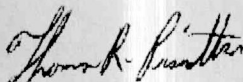
Mr. Frank Battaglia
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Report/Design Concepts Proposal will be submitted 11 weeks after data acquisition is complete.

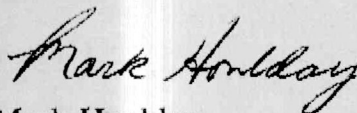
BY MAY 7, 1993

Please call if you have any questions on this matter.

Very truly yours,



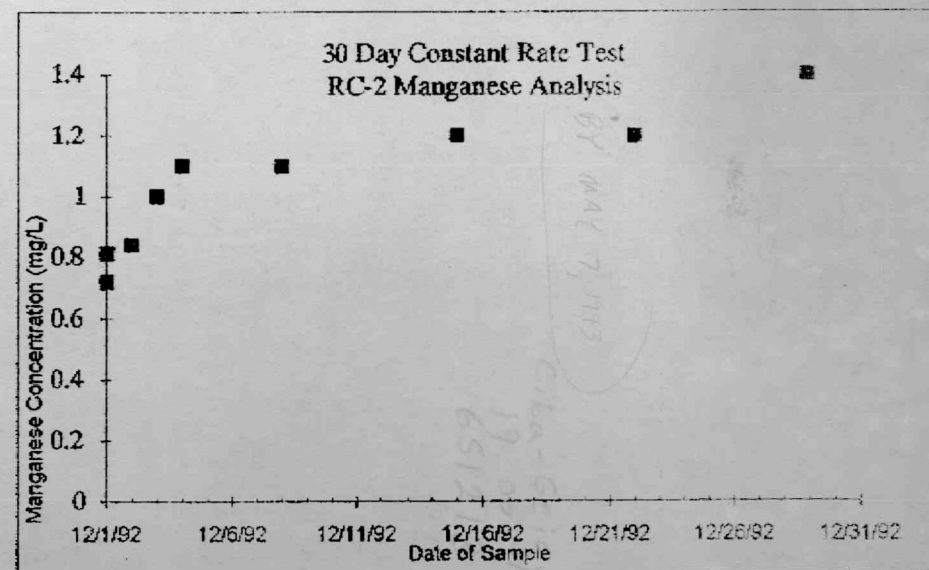
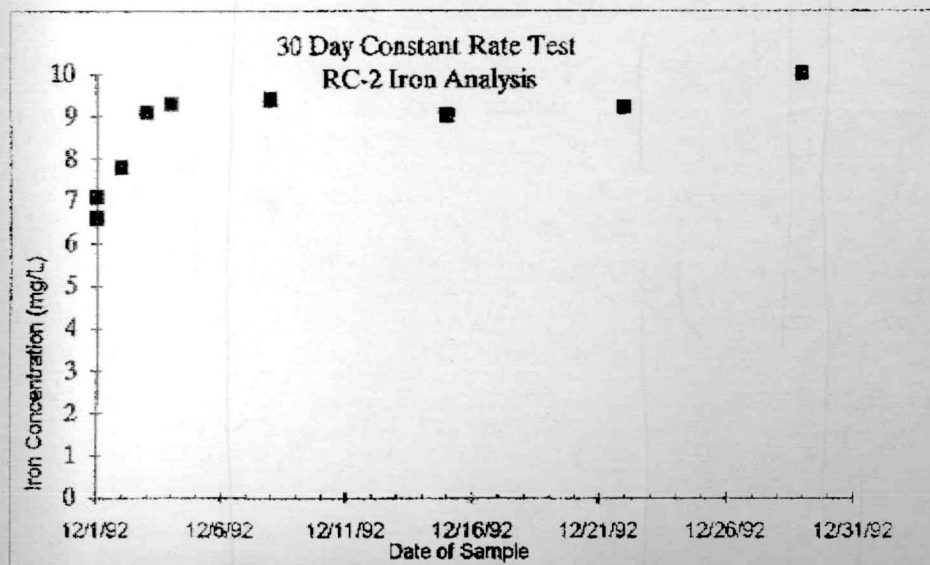
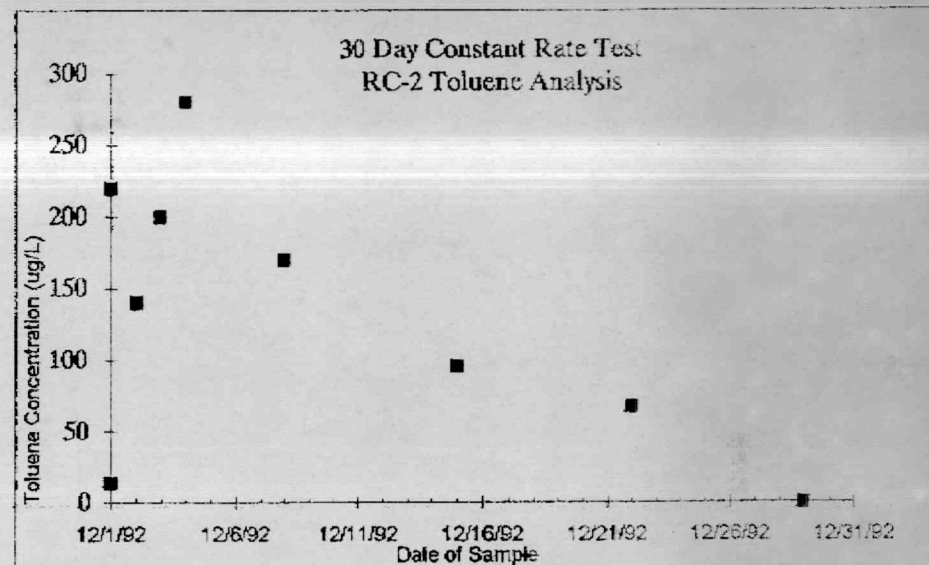
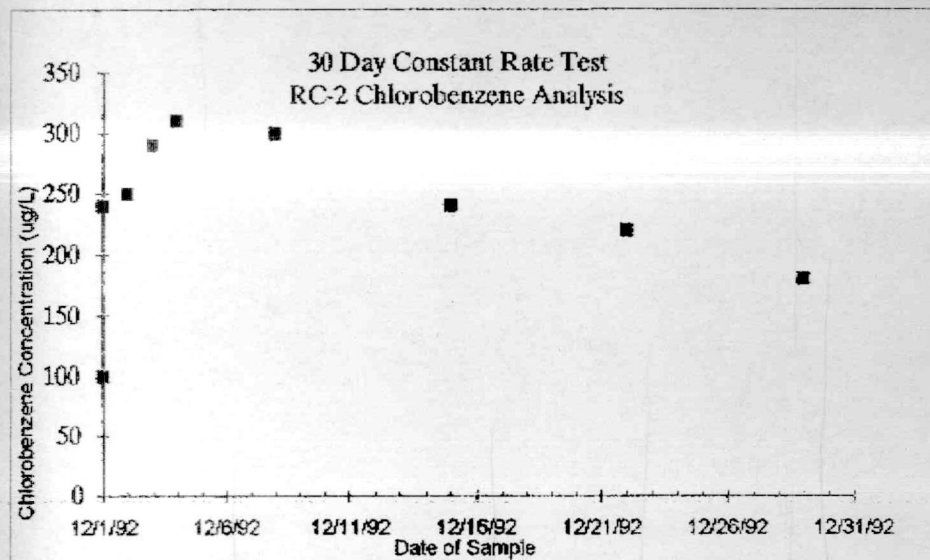
Thomas Pisciotto
Project Hydrogeologist

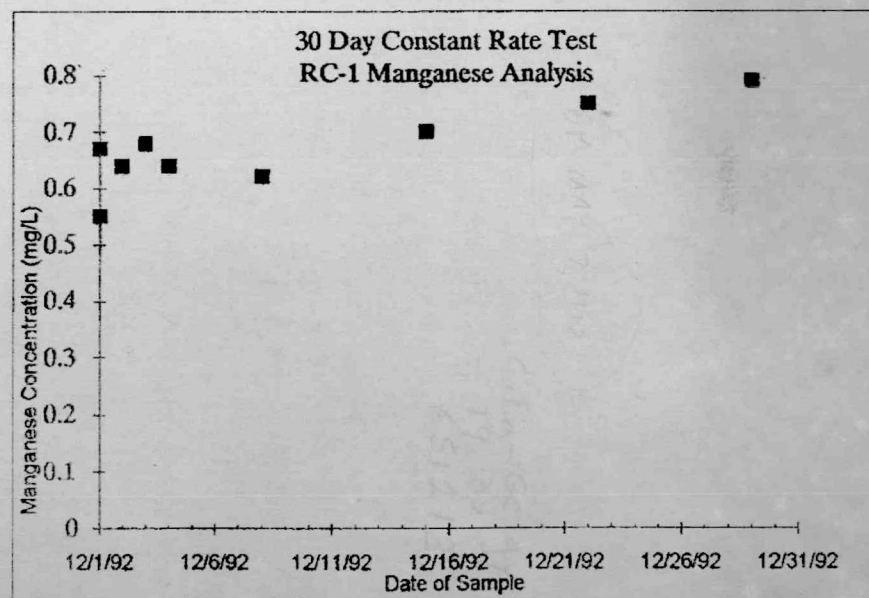
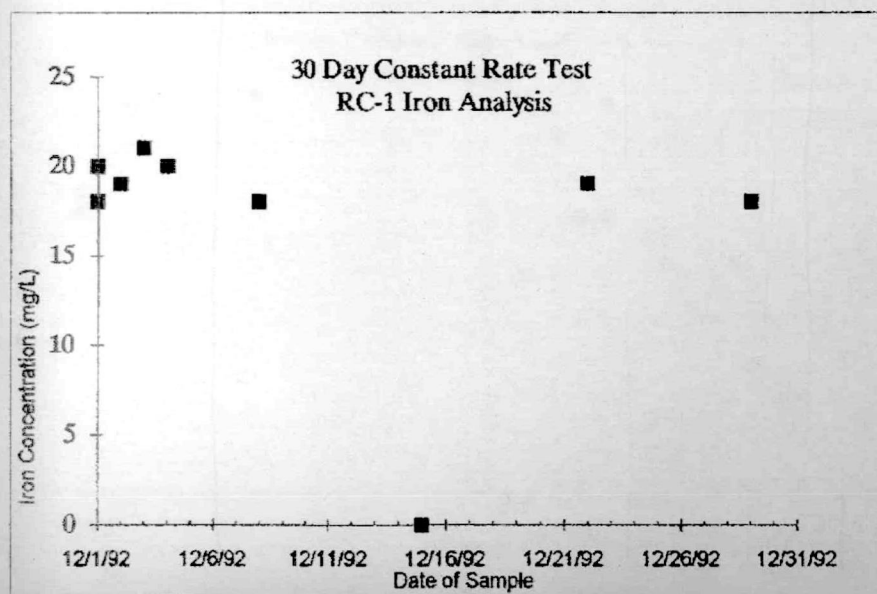
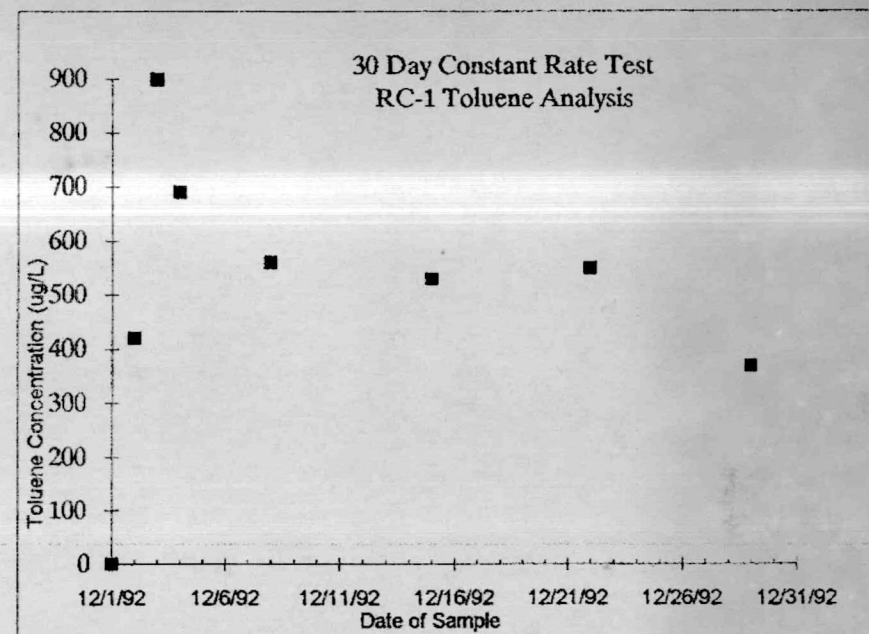
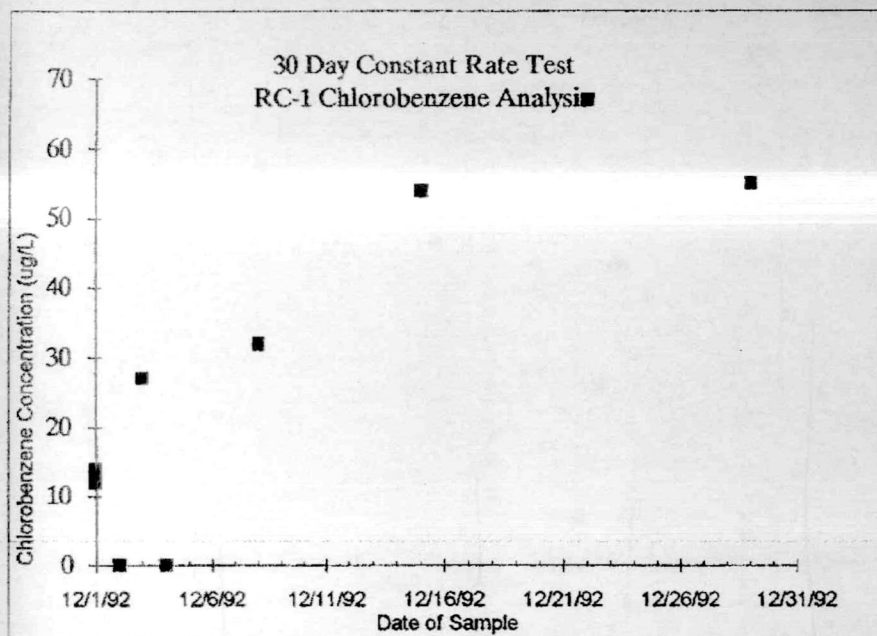


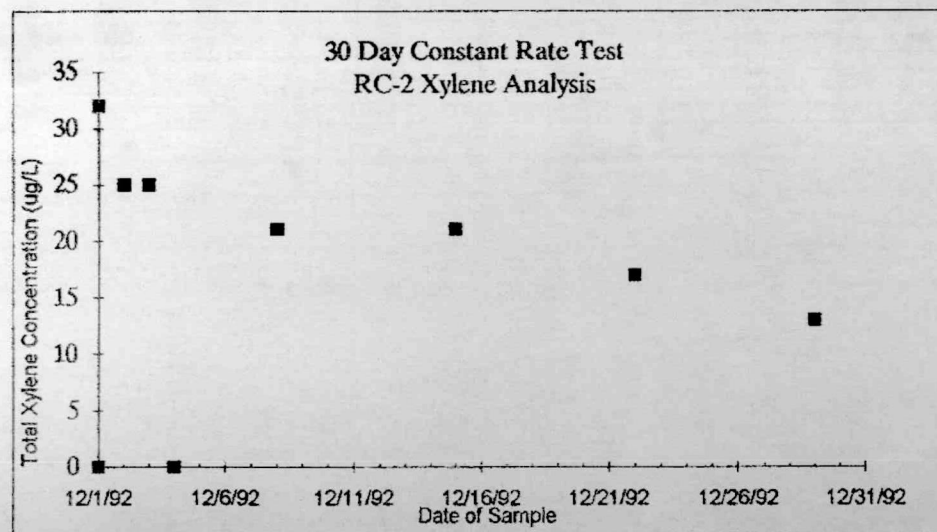
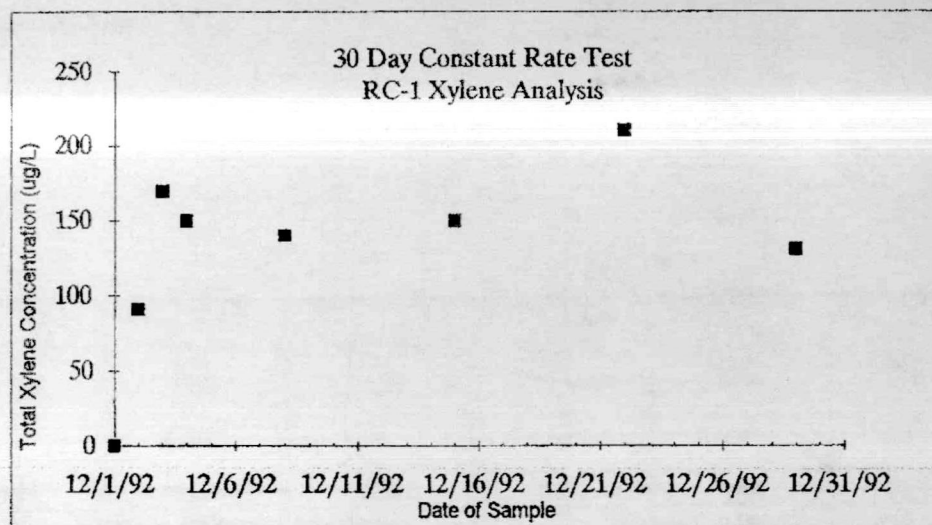
Mark Houlday
Project Manager

TP:MH:cd

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30-DAY CONSTANT RATE TEST ANALYTICAL RESULTS

Sample Number	RC-1*PT-1	RC-1*PT-2	RC-1*PT-3	RC-1*PT-4	RC-1*PT-5	RC-1*PT-6	RC-1*PT-7	RC-1*PT-8	RC-1*PT-9
Date Collected	12/1/92	12/1/92	12/2/92	12/3/92	12/4/92	12/8/92	12/15/92	12/22/92	12/29/92
Time Collected	1130	1930	1130	1130	1040	1110	1045	1215	1030
Parameters									
Aluminum									0.2
Arsenic (mg/L)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01
Calcium (mg/L)	19	21	20	22	21	20	21	22	22
Iron (mg/L)	18	20	19	21	20	18	nd	19	18
Manganese (mg/L)	0.55	0.67	0.64	0.68	0.64	0.62	0.7	0.75	0.79
Sodium (mg/L)	24	24	23	25	24	26	32	35	36
Chlorobenzene (ug/L)	12	14	nd	27	nd	32	54	67	55
Toluene (ug/L)	nd	nd	420	900	690	560	530	550	370
Xylenes (Total)(ug/L)	nd	nd	91	170	150	140	150	210	130
Acetone (ug/L)				140					
Ethylbenzene (ug/L)				31			55	69	83

30-DAY CONSTANT RATE TEST ANALYTICAL RESULTS

Sample Number	RC-2*PT-1	RC-2*PT-2	RC-2*PT-3	RC-2*PT-4	RC-2*PT-5	RC-2*PT-6	RC-2*PT-7	RC-2*PT-8	RC-2*PT-9
Date Collected	12/1/92	12/1/92	12/2/92	12/3/92	12/4/92	12/8/92	12/15/92	12/22/92	12/29/92
Time Collected	1140	1935	1135	1140	1050	1100	1055	1220	1040
Parameters									
Arsenic (mg/L)		0.016	0.02	0.02	0.06	0.02	0.02	0.02	0.02
Aluminum (mg/L)			0.2						
Calcium (mg/L)	27	25	24	25	24	23	23	24	24
Iron (mg/L)	6.6	7.1	7.8	9.1	9.3	9.4	9	9.2	10
Lead (mg/L)								0.006	
Magnesium (mg/L)	7.2	7.3	7	7	7	6	6.2	6.4	6.3
Manganese (mg/L)	0.81	0.72	0.84	1	1.1	1.1	1.2	1.2	1.4
Sodium (mg/L)	46	38	37	38	36	34	34	36	41
Benzene (ug/L)							13		5.4
Chlorobenzene (ug/L)	100	240	250	290	310	300	240	220	180
Toluene (ug/L)	14	220	140	200	280	170	96	68	nd
Xylenes (Total)(ug/L)	nd	32	25	25	nd	21	21	17	13

30-DAY CONSTANT RATE TEST ANALYTICAL RESULTS

Sample Number	MW-1S*PT-12/1/92	MW-1S*PT-612/8/92	MW-1S*PT-712/15/92	MW-2S*PT-712/15/92	MW-2S*PT-912/29/92
Date Collected	1145		1035	1300	1050
Time Collected					
Parameters					
Aluminum (mg/L)	2.3	0.7		0.3	0.2
Arsenic (mg/L)		0.02			
Barium (mg/L)					0.3
Calcium (mg/L)	54	45	53	69	90
Iron (mg/L)	0.9	0.5	6.6	2.5	1.1
Lead (mg/L)		0.004		0.006	
Manganese (mg/L)	1.4	0.89	1.6	0.23	0.39
Potassium (mg/L)	10	6	8.2	14	11
Chromium (mg/L)	0.012				
Sodium (mg/L)	90	98	44	20	68
Zinc (mg/L)				0.2	
Chlorobenzene(ug/L)	12000	1700	13000	1400	22000
1,2-Dichloroethylene (total) (ug/L)				290	16000
Toluene (ug/L)					2000
Vinyl chloride (ug/L)		62			